2010

# AVerMedia®

# AVerDiGi SEB5116+

Service Manual

AVerMedia® AVerDiGi SEB5116+

Version 1.0

2010/3/10

# Table of contents

1. **Version history of service manual** ....3

1.1. Version history....3

2. **About this service manual** ....4

2.1. Legal information & disclaimer....4

2.2. Technical specifications....5

3. **Parts list** ....8

3.1. Main modules....8

3.2. Screws and other parts....11

3.3. Outside case and other parts....13

4. **Disassembly & Assembly**....15

4.1. Tools needed....15

4.2. To disassemble and assemble the DVR....15

5. **Troubleshooting procedures** ....26

5.1. None UI related ....26

5.1.1. What should I do if the unit is not booting? ....27

5.1.2. What should I do if there is no local VGA / BNC display? ....28

5.2. UI related ....29

5.2.1. What should I do if there is no camera (analog) display? ....30

5.2.2. What should I do if the network function is not working? ....31

5.2.3. What should I do if the DVD backup is not working? ....32

5.2.4. What should I do if the audio is not working? ....33

5.2.5. What should I do if the HDD is not recording? ....33

5.2.6. What should I do if the pointing device is not working? ....33

5.2.7. What should I do if the remote control is not working? ....34

5.2.8. What should I do if the front panel control is not working? ....34

5.2.9. What should I do if the unit shuts down unexpectedly? ....34

# 1. Version history

| Version | Released date | Description | Editor | Approved by |
|---|---|---|---|---|
| 1.0 | 3/10/2010 | First version | Erick | Rita / Jane |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# 2.About this service manual.

## 2.1 Legal information & disclaimer.

### Initial information

This guide is a troubleshooting reference used for maintaining and servicing the DVR SEB5116+. It provides comprehensive information on identifying DVR features, components, and spare parts; troubleshooting DVR problems; and performing DVR disassembly procedures.

The target users of this document are our value customers and customer service teams.
No part of this document may be copied, reproduced, or transmitted by any means, without prior written permission from AVerMedia® Information,Inc. AVerMedia® Information,Inc will not take the responsible of the losses of those unauthorized and misuse by third parties.

### Warning

Only authorized technicians should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly-/module-level repair.
Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or modifications to any printed wiring board. Improper repairs can create a safety hazard.
Any indication of component replacement or printed wiring board modification may void any warranty or exchange allowances.

### Caution

To prevent static damage to components inside your DVR, discharge static electricity from your body before you touch any of your DVR's electronic components. You can do so by touching an unpainted metal surface.

## 2.2 Technical specifications.

Please refer to the following general technical specifications for the SEB5116+ DVR.

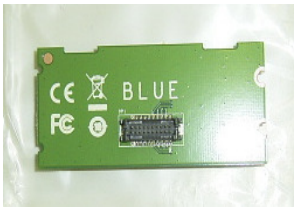
| Electrical specifications | |
|---|---|
| Camera Inputs (analog) | 16 BNC connectors |
| Camera Inputs (IP) | N/A |
| Video output | VGA Out x 1, Composite out x 1, Spot out x 1 |
| Loop Through Outputs(analog) | 16 BNC connectors via DVI cable (Optional) |
| Composite video signal | 1 Vpp, 75 Ohm |
| Recording resolution (analog inputs) | Full D1: 720X480 / 720X576 (NTSC/PAL)<br>Half D1:720X240 / 720X288 (NTSC/PAL)<br>CIF: 352X240 / 360X288 (NTSC/PAL) |
| Recording resolution (IP inputs) | N/A |
| Compression Method (analog) | MPEG4 |
| Recording frame rate (analog inputs) | D1: 120/100 fps (NTSC/PAL)<br>Half D1: 240/200 fps (NTSC/PAL)<br>CIF: 480/400 fps (NTSC/PAL) |
| Recording rates per channel (video inputs analog) | NTSC:0-30 fps PAL:0-25 fps |
| Recording rates per channel (video inputs IP) | N/A |
| Preview resolution | VGA: 1024 X 768 (UI)<br>PAL:720 X 576<br>NTSC: 720 X 480 |
| Supported IP cameras (support IP PTZ, IP IO, and IP audio if IP cameras built-in) | N/A |
| Audio Inputs | 16 |
| Audio Output | 1 |
| Microphone Input | 1 |

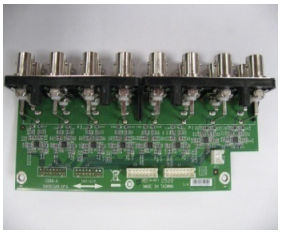
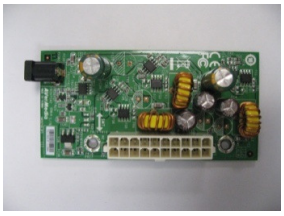
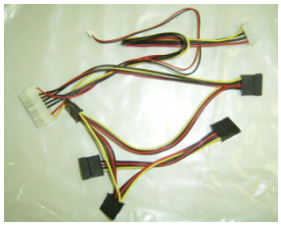
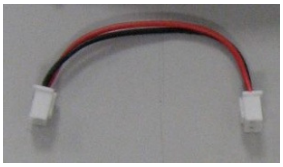
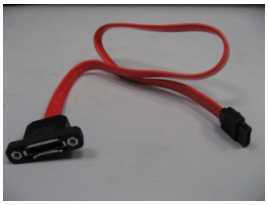
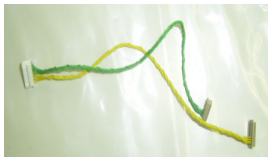
| | |
|---|---|
| Alarm Inputs | 16 |
| Relay Outputs | 4 |
| PTZ control (analog) | Protocol supported:<br>Pelco-D, Pelco-P, DynaColor, Lilin, CD55, DiGiDome, YoKo, MicroJack-P, Cannon(VC-C4R), Panasonic(CS859/CW860), Samsung(SCC-641), JVC(TK-C676), JVC(TK-C675), Sony(EVI-D70P), Philips(TC8560/TC700), ELMO(PTC-200C), Fastrax II(HID-2404), AmericanDynamics_Ultra, DMP23-H2, MD101, Sony(15-cz45-1) |
| Storage capacity support | Support up to 4 SATA HDD |
| eSATA support | Support eSATA RAID |
| Ethernet | 10/100/1000Base-T, bandwidth-limited |
| RS 485 port | 1, Terminal Block, Tx+, Tx-, Rx+, Rx- |
| RS 232 port | 1, 9 Pin, Male |
| USB 2.0 | 2 |
| DVD writer | 1 |
| Power Input | 65W(1~2 HDD) / 90W (3~4 HDD) |
| Typical power consumption | N/A |
| Power consumption | N/A |
| Operating system | Embedded Linux, Graphical User Interface |
| Operator Interface | Front panel keypad, USB mouse, remote controller(support optional IR extension cable) |
| Web Browser (Remote Client) | Microsoft Internet Explorer 6 or higher, on Windows 2000, XP, VISTA, Windows 7 |
| Export of video/audio data | AVerMedia format |
| **Mechanical facilities** | |
| Dimensions(H x W x D) | 430 x 65 x 370 mm |
| Weight | N/A |
| **Environmental conditions** | |
| Operating temperature | 0 ℃ to +40 ℃ (32 ° to 104 ℉) |
| Storage temperature | -30 ℃ to +60 ℃ (-22℉ to 140 ℉) |
| Relative humidity in operation | 50%-80% |
| Relative humidity when stored | 90% |
| **Electromagnetic Compatibility (EMC)** | |

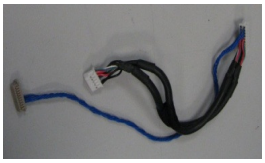
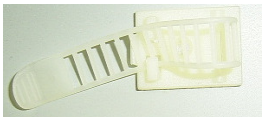
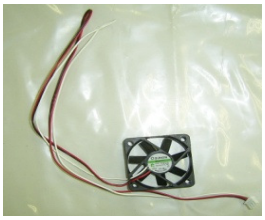
| | |
|---|---|
| USA | FCC Part 15, Class A |
| EU | EN 55011(Group I, Class A)<br>EN 61000-3-2: 2000, Class A |
| **Safety** | |
| EU | N/A EN 60950-1: 2001+A11:2004 |

# 3. Parts list.

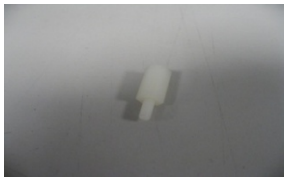
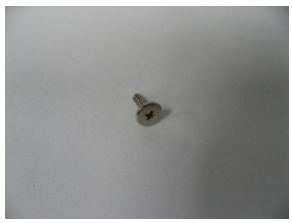
## 3.1 Main modules.

| Part number | Part description | Picture |
|---|---|---|
| 51C2A9NP00AJ | GM_SEB5116_AVI_0_C2A9-B | |
| 51C2A9NP00AB | GM_SEB5116_AVI_0_FUN.NUM(2 IN 1) |  |
| 51C2A9NP00AB | GM_SEB5116_AVI_0_FUN.NUM(2 IN 1) | |
| 51C2A9NP00AC | GM_SEB5116_AVI_0_IR | |
| 51C2A9NP00AD | GM_SEB5116_AVI_0_CONTROL | |
| 51C2A9NP00AE | GM_SEB5116_AVI_0_USB | |

| Part number | Part description | Picture |
|---|---|---|
| 51C2A9NP00AG | GM_SEB5116_AVI_0_VIDEO IN |  |
| 51C2A9NP00AH | GM_SEB5116_AVI_0_POWER |  |
| 064APOWERBFV | CABLE_ATX_760 ㎜ |  |
| 064AOTHERBF3 | CABLE_TU3001_80 ㎜ |  |
| 064ASATA-BJF | CABLE_SATA TO E-SATA_400 ㎜ |  |
| 064AOTHERBFS | CABLE-POWER SWITCH & IR-410mm | |
| 064AOTHERBFW | CABLE-FUNCTION & CONTROL-200mm |  |

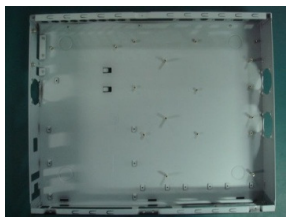
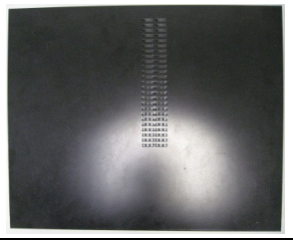
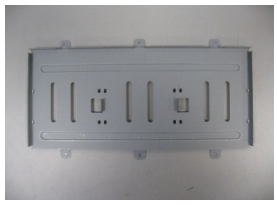
| Part number | Part description | Picture |
|---|---|---|
| 064AOTHERBFX | CABLE_USB+NUMBER_200 ㎜ |  |
| 064AOTHERBGA | CABLE-UL2651-16C-150mm | |
| 064AIDE--BDW | CABLE_ATA33-40PIN-1_350 ㎜ | |
| 208AC2F1-ADX | PLASTIC-電線固定板 (FWA-22C) |  |
| 0410KDE12AB5 | FAN_4300RPM_12V_50*50*10 ㎜ |  |

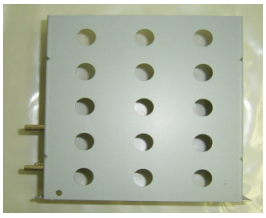
### 3.2 Screws and other parts.

| Part number | Part description | Picture |
|---|---|---|
| 207AAAAAAAN | P-SUP_H11 ㎜_M3 |  |
| 100AAAAAAAEG | SCREW_MU_I 頭_T_M2.6*8 ㎜_NI_尾 TP1 | |
| 100AAAAAAADD | SCREW_MU_T 頭_M_3*4 ㎜ _NI_頭徑 6.8 | |
| 100AAAAAAAH5 | SCREW_BI 頭_T_1.7*5 ㎜ _NI_頭徑 4.5-尾 TP3 |  |
| 100AAAAAAADH | SCREW_MU_F 頭_M_3*5 ㎜ _NI_頭徑 5 | |
| 100AAAAAAAG4 | SCREW_MU_F 頭_T_5*8 ㎜ _NI_尾 TP4 | |

| Part number | Part description | Picture |
|---|---|---|
| 100AAAAAAAFD | SCREW_MU_P 頭_T_3*8 ㎜ _NI_尾 TP1 | |
| 100AAAAAAAG6 | SCREW_MU_I 頭_M_3*5 ㎜ _NI+耐落_頭徑 5.5 | |
| 100AAAAAAAFD | SCREW_MU_P 頭_T_3*8 ㎜ _NI_尾 TP1 | |
| 100AAAAAAAG6 | SCREW_MU_I 頭_M_3*5 ㎜ _NI+耐落_頭徑 5.5 | |
| 100AAAAAAAG3 | SCREW_MU_B 頭 _M_H2.2*6 ㎜_NI+耐落 _6#-32 | |

### 3.3 Outside case and other parts.

| Part number | Part description | Picture |
|---|---|---|
| 0700DVD--AJR | COMPUTER_DVD_22X | |
| 200AC2A9-B2K | P-MOLD_N19_C2A9_前面板(SEB5116+)-黑色 | |
| 208AC2A9-AJW | P-PLATE_C2A9_90*22.5 ㎜_銘版(黑) | |
| 102AC2A9-ASS | M-CASE_N20_C2A9_427.5*350*59.2 ㎜ |  |
| 102AC2A9-ASV | M-CASE_N20_C2A9_430*350.5*60 ㎜ |  |
| 112AC2A9-AKA | METAL-C2A9-補強桿 | |
| 112AC2A9-AKE | METAL-C2A9-HD 固定架(3IN1) |  |

| Part number | Part description | Picture |
|---|---|---|
| 112AC2A9-AKB | METAL-C2A9-光碟固定架 |  |
| 112AC2A9-AKG | SHEET_N20_C2A9_USB 固定架 | |
| 301AC2A9-CWH | PX_C2A9_配件白盒_EN | |
| 064AOTHERBFJ | CABLE-SERIAL ATA CABLE-500mm | |
| 40AAO8MB-AG7 | TRANH_USB MOUSE_MO96UOB-MU3100-AVI LOGO | |
| 041313GOOAK5 | ADAPT_AC/DC_100~240V_19V_3.42A | |
| 064APOWERBF7 | CABLE_POWER-P301-S305-美規_1830 ㎜ | |

# 4. Disassembly & Assembly procedures.

## 4.1 Tools needed for disassembling and assembling the DVR.

## 4.2 To disassemble / assemble the DVR.

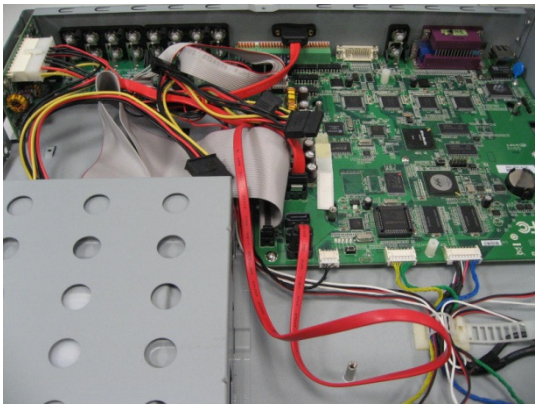
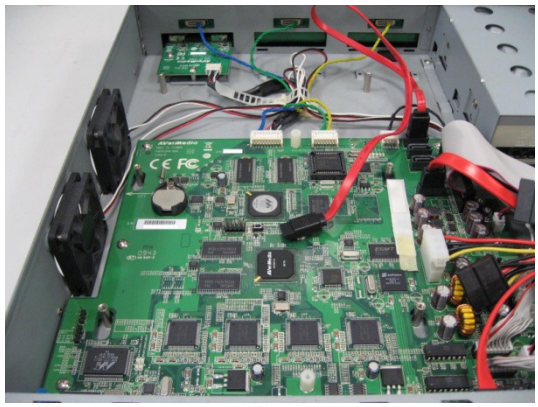
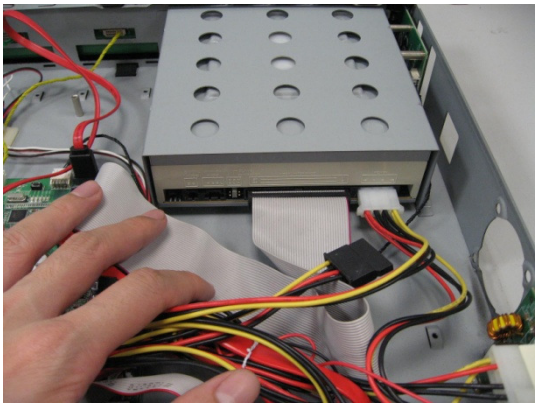
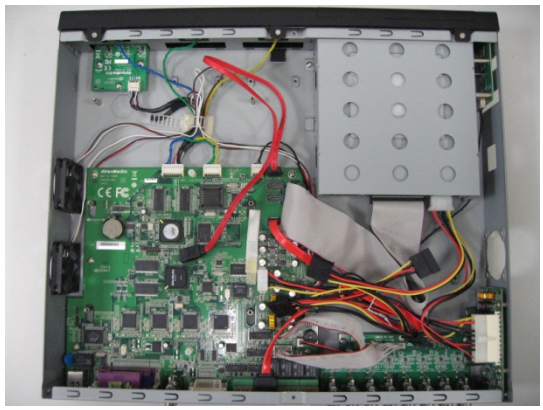
**Step 1.** Initially, please have unscrew the 8 screws of the outer case. These are located in left, right and back side of this DVR. Please see the following pictures for details.

**Step 2.** Remove the outer case after unscrewing the 8 screws.

**Step 3.** Afterwards, please remove the iron protection steel by unscrewing two mounting screws. See the following pictures.

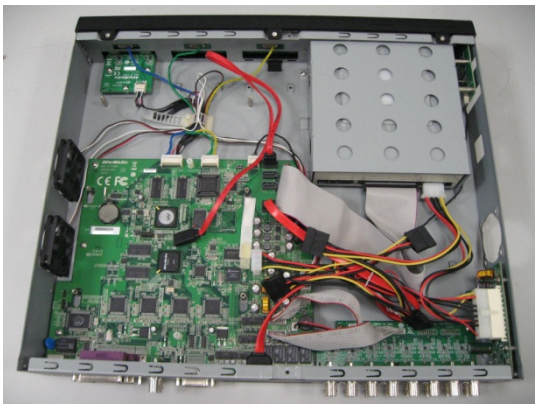
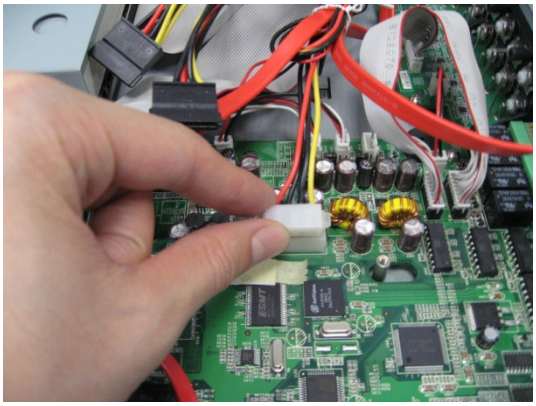
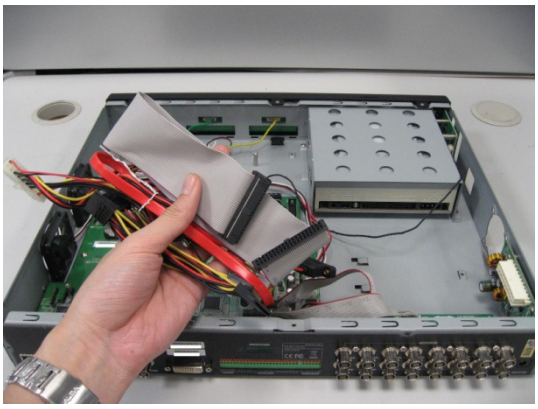
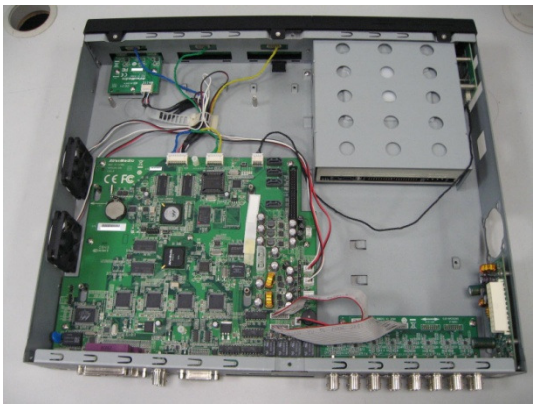
**Step 4.** Please remove the HDD iron rack.

**Step 5.** After removing the HDD iron rack, the inside of the DVR will reveal itself as following. Please use the pictures below as a reference and remember the correct cable connections for further disassembling.

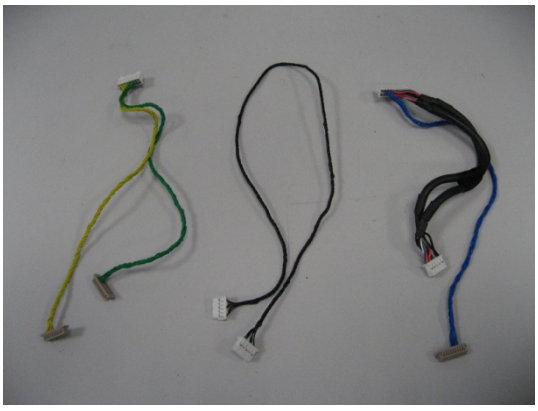
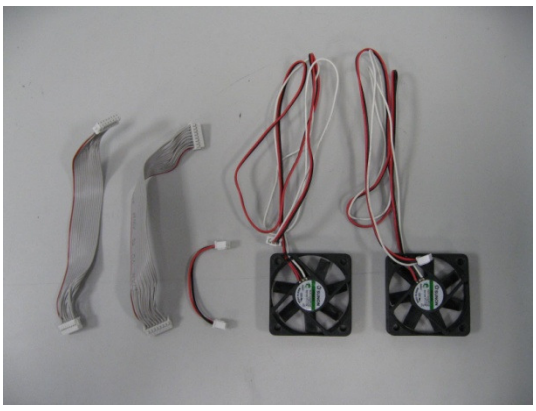





**Step 6.** The next step includes the removal of all power cables (i.e. SATA / e-SATA / main power cable ) by unscrewing the two screws from the e-SATA interface on the back of the DVR. Accordingly, please unmount all power cables from the PCB board.

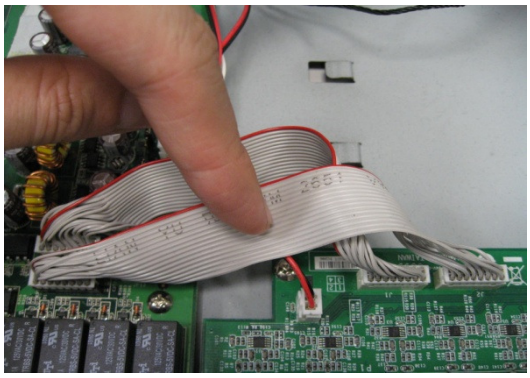
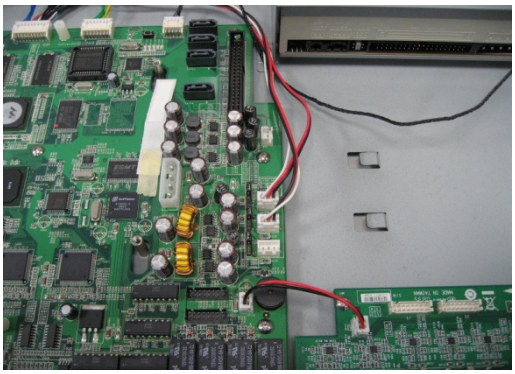
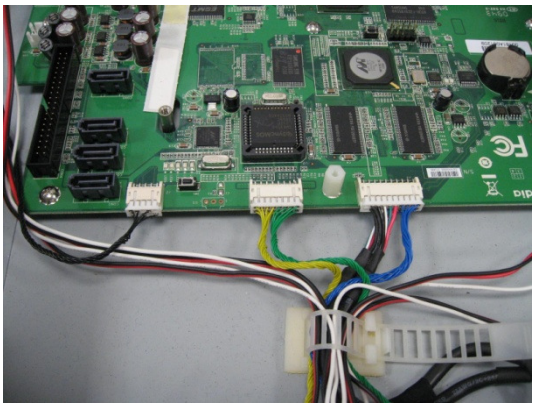
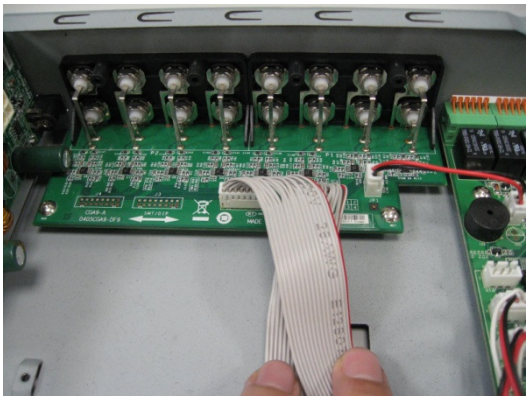
**Step 7.** Please remove the power / SATA cables from the main power board, DVD-ROM drive and PCB board. Please see the following pictures for the detailed removal procedure.

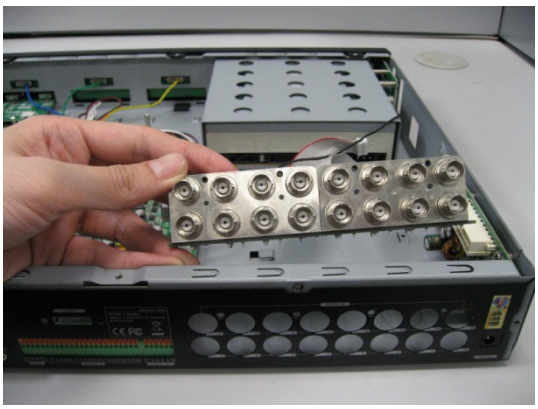
**Step 8.** In the next step please remove all remaining connection cables from and to the PCB board inside the DVR. Those cables are the one coming from the front panel (Yellow, green, blue and 3 thick black cables), front panel power board, video in BNC board and two fans – including cables. Please refer to the following pictures and make sure to remove them carefully.

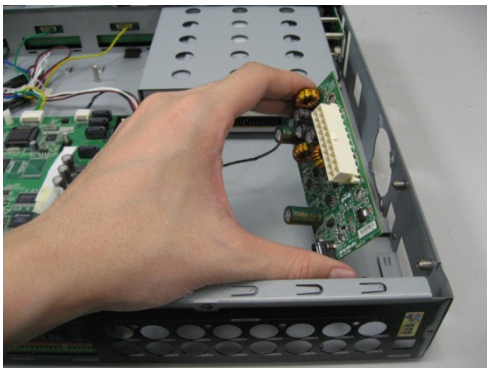
**Step 9.** You may see the following pictures revealing the exact connection position of the cables you are about to remove.

**Step 10.** After removing all the cables insides the unit, please start removing the PCB boards. Initially, please remove the video-in BNC board. It is being mounted to the back of the DVR through 6 screws.

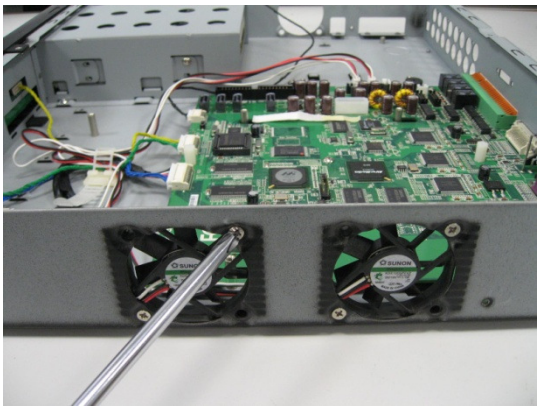


**Step 11.** After removing the video-in BNC board, please remove the main power board located next to it. Please refer to the following pictures.

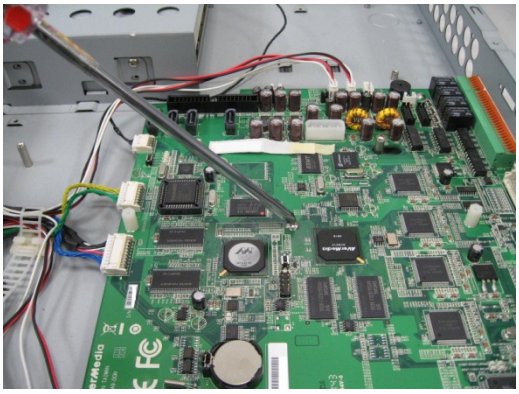


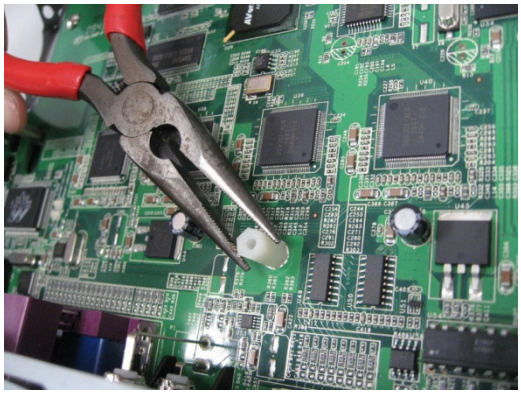
**Step 12.** Once the main power board has been removed, please follow up by disassembling the main system PCB board - the biggest PCB board inside the unit. Please unscrew all remaining screws from the back of the DVR and make sure to removing the two fans before taking out the main PCB board. Please see the following pictures.

**Step 13.** The 2 cooling fans may be un-mounted by unscrewing 4 screws, as you can see from the following pictures.

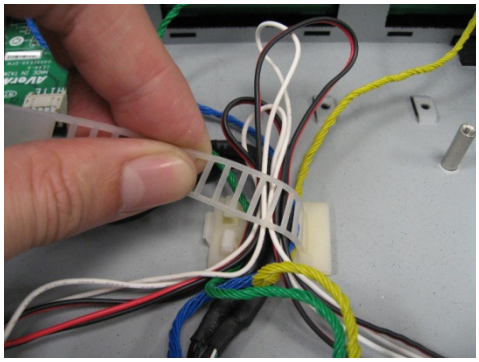


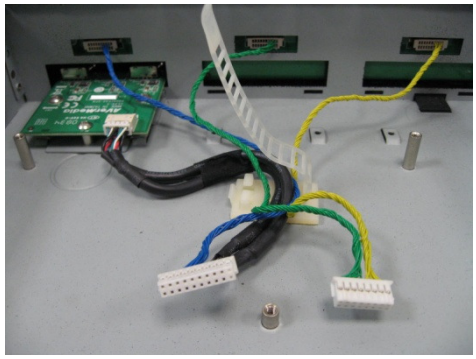
**Step 14.** The system PCB board is mounted inside the case with 9 screws. Please unscrew them and take out the board.



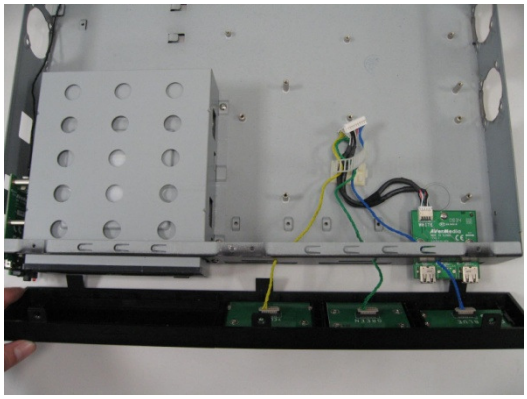


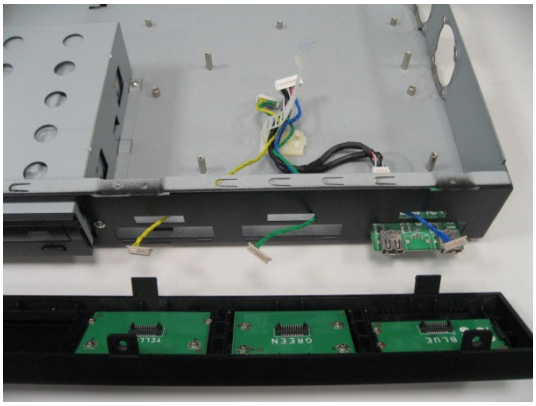
**Step 15.** This step reveals the removal procedures of the front panel of the DVR. Please loosen the lace which holds the connection cables of the front panel.



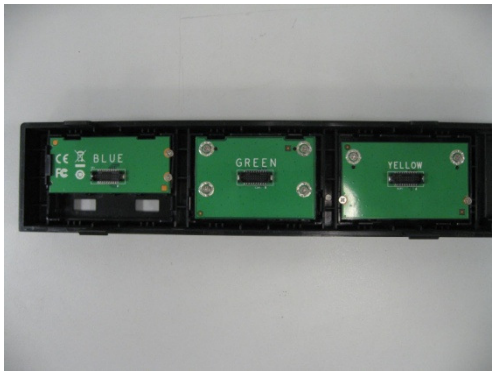


**Step 16.** The front panel is secured through 3 screws. Please remove these and unplug the connection cables coming from the PCB board. The pictures below reveal the details.



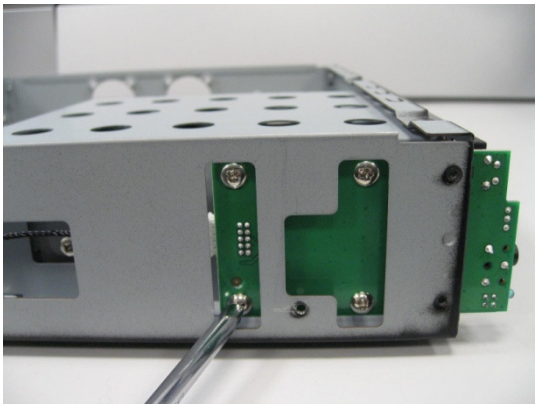


**Step 17.** Once the front panel has been removed, please remove the 3 PCB boards from the plastic case. Unscrew total 10 screws from the 3 PCB boards.

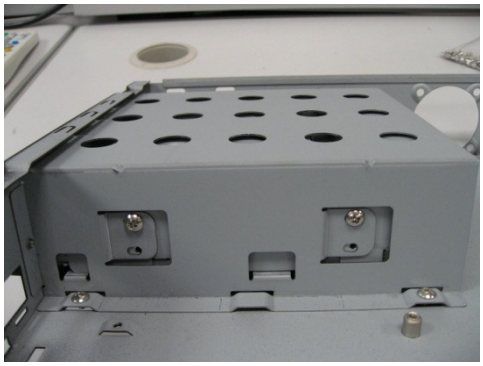


**Step 18.** After the front panel has been removed from the DVR, the USB PCB board has to be removed from the metal case by unscrewing 3 screws. Please refer to the following pictures.

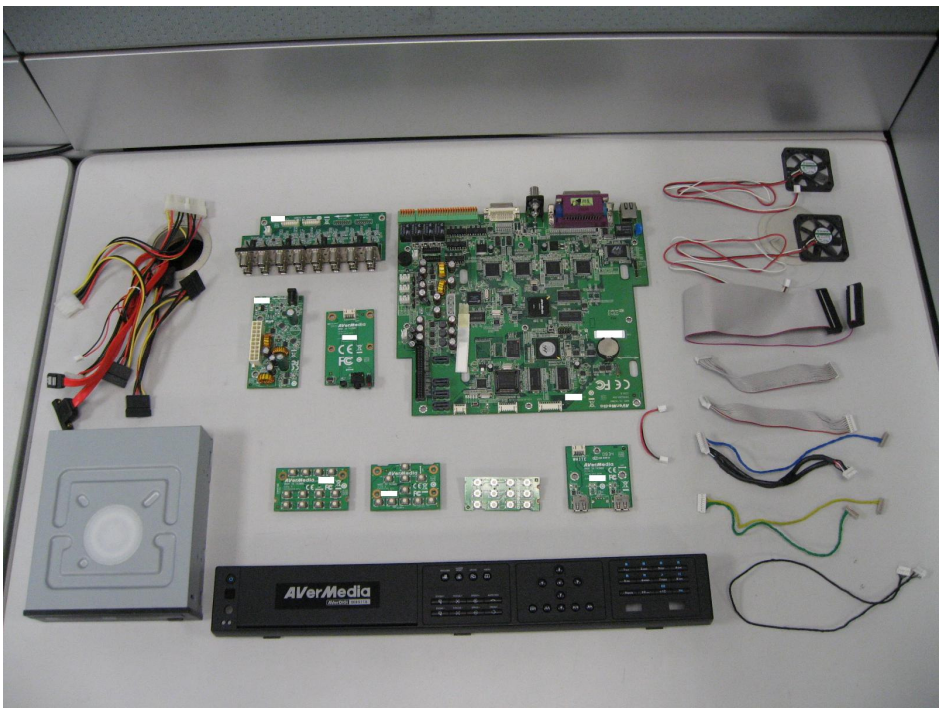
**Step 19.** The last remaining PCB board inside the metal case holds the front panel power button and the power- / HDD-LED indicator. Please disassemble it by unscrewing 4 screws.

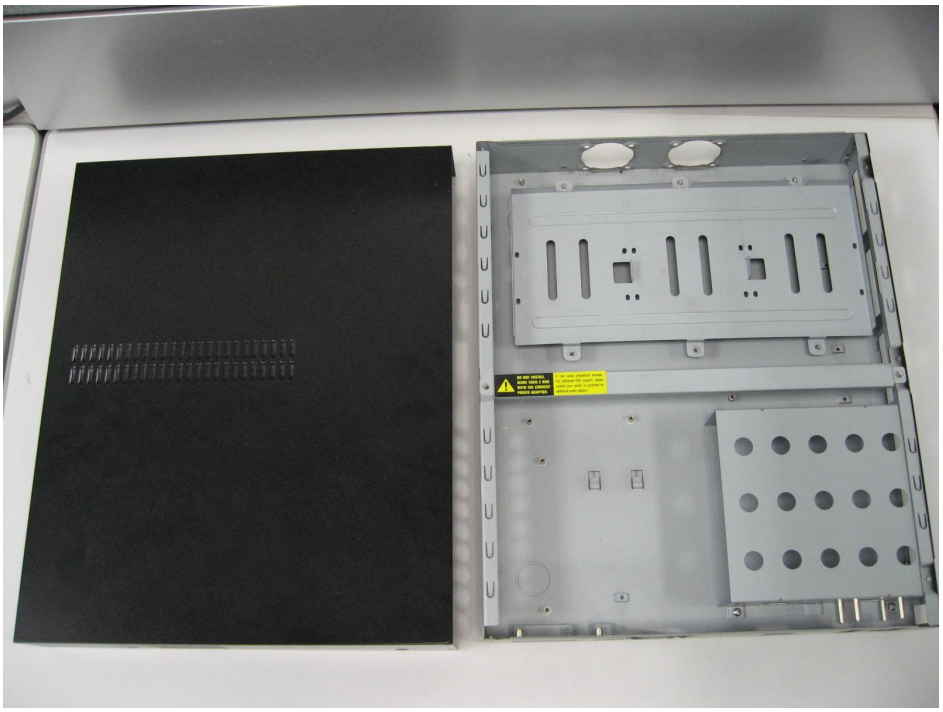


**Step 20.** The final step reveals the removal of the internal DVD drive. To do so, please unscrew the 4 screws, which hold the drive inside the metal case.



**Step 21.** Please see the following pictures, which show the completely disassembled DVR and all of its components.

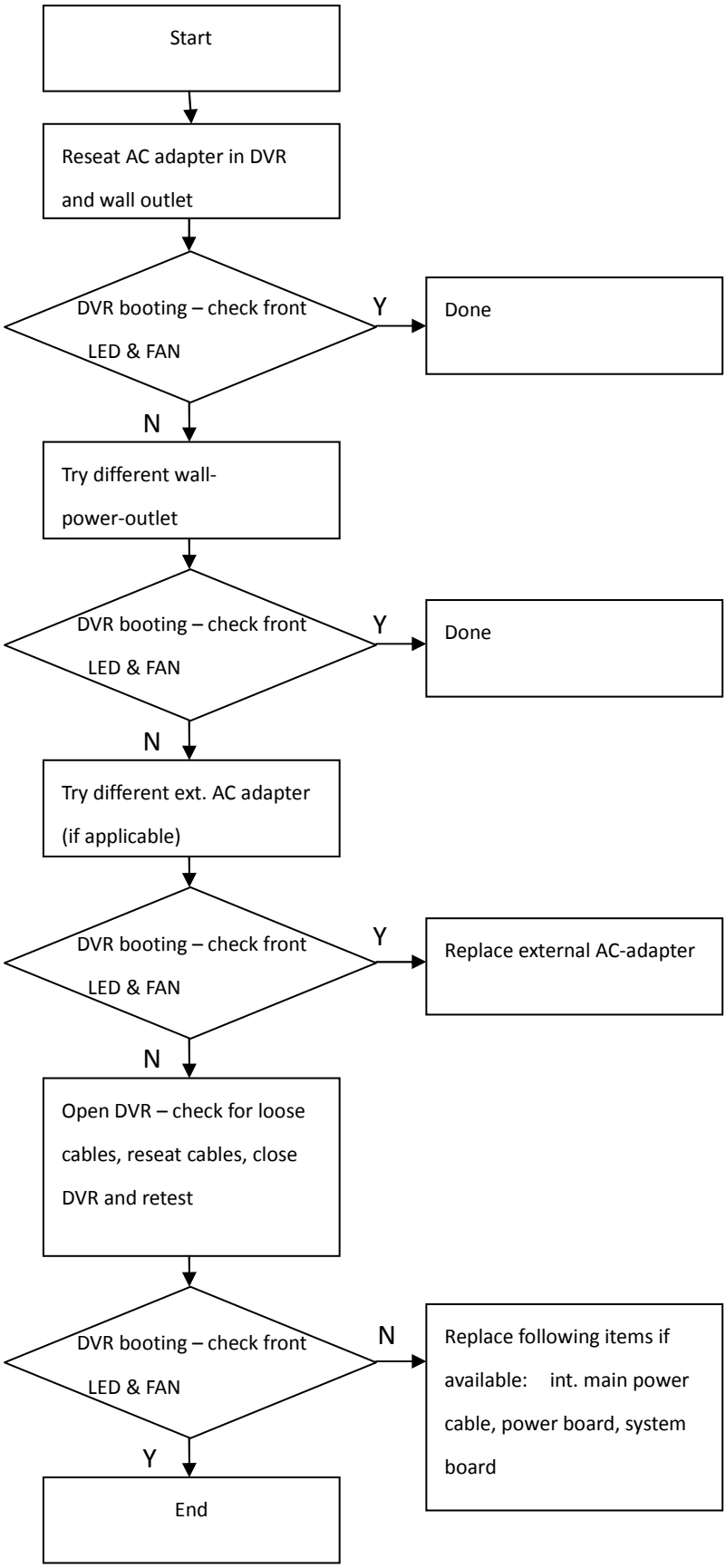


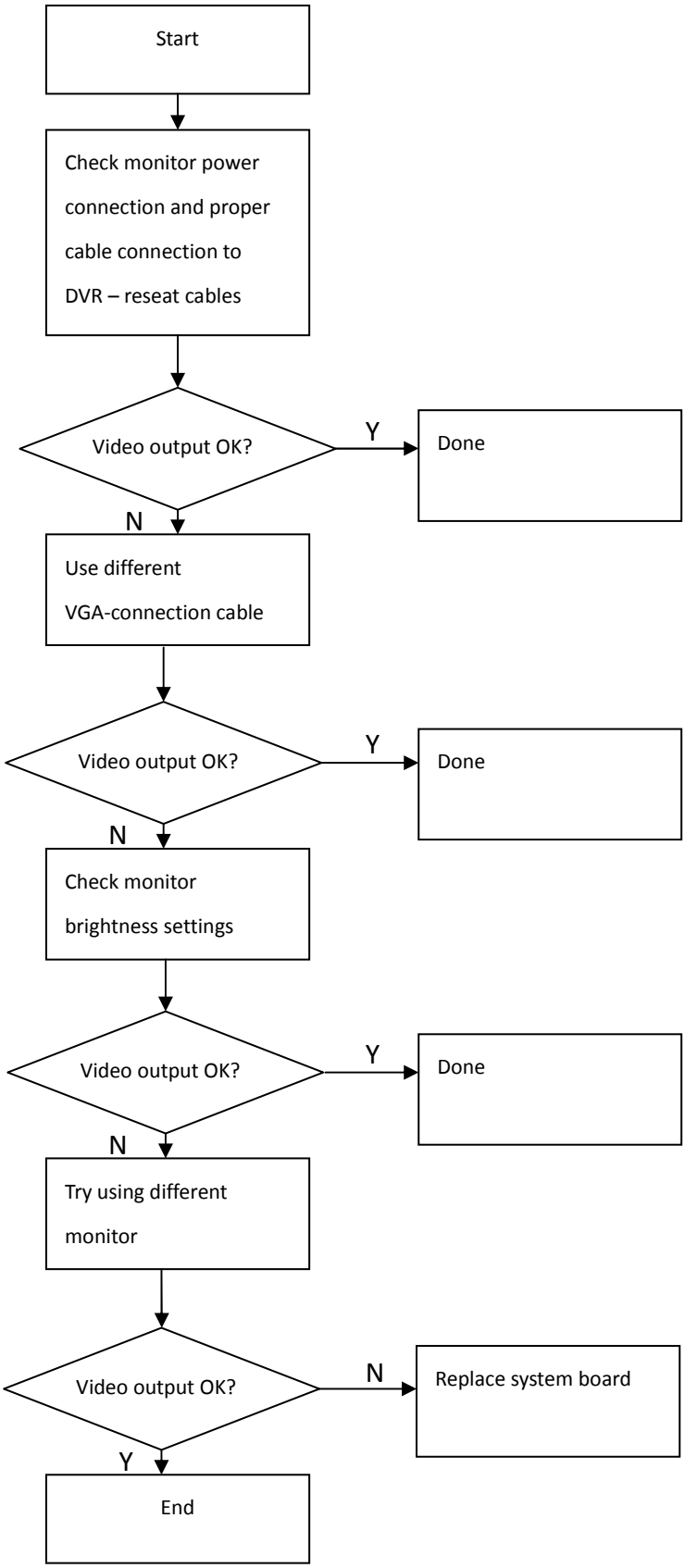
# 5. Troubleshooting Procedures

5.1 (None UI related issues)

### 5.1.1 DVR does not boot up?


Start
Reseat AC adapter in DVR and wall outlet
DVR booting – check front LED & FAN
Y
Done
N
Try different wall-power-outlet
DVR booting – check front LED & FAN
Y
Done
N
Try different ext. AC adapter (if applicable)
DVR booting – check front LED & FAN
Y
Replace external AC-adapter
N
Open DVR – check for loose cables, reseat cables, close DVR and retest
DVR booting – check front LED & FAN
N
Replace following items if available: int. main power cable, power board, system board
Y
End

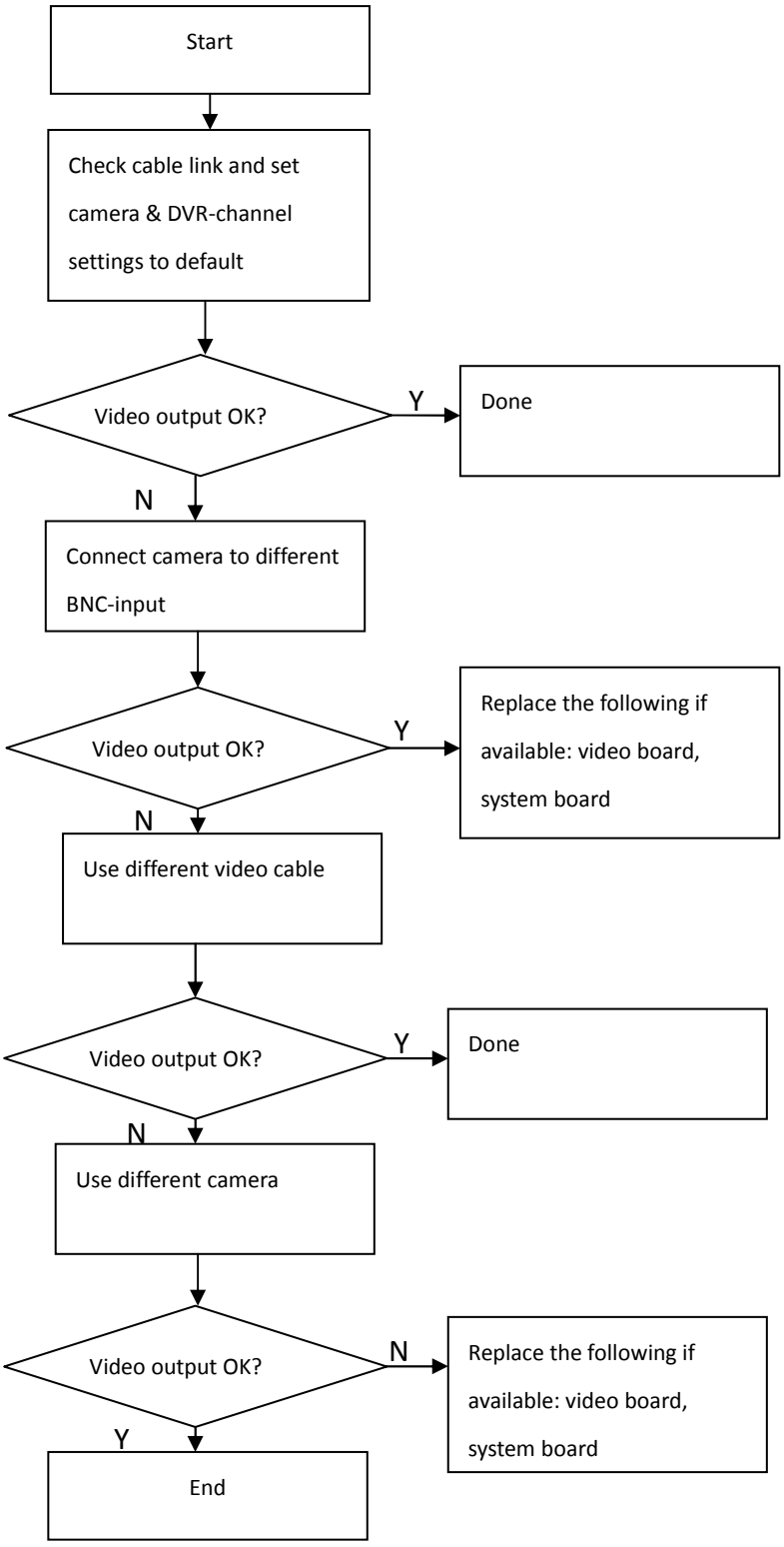
### 5.1.2 No local VGA / BNC display?



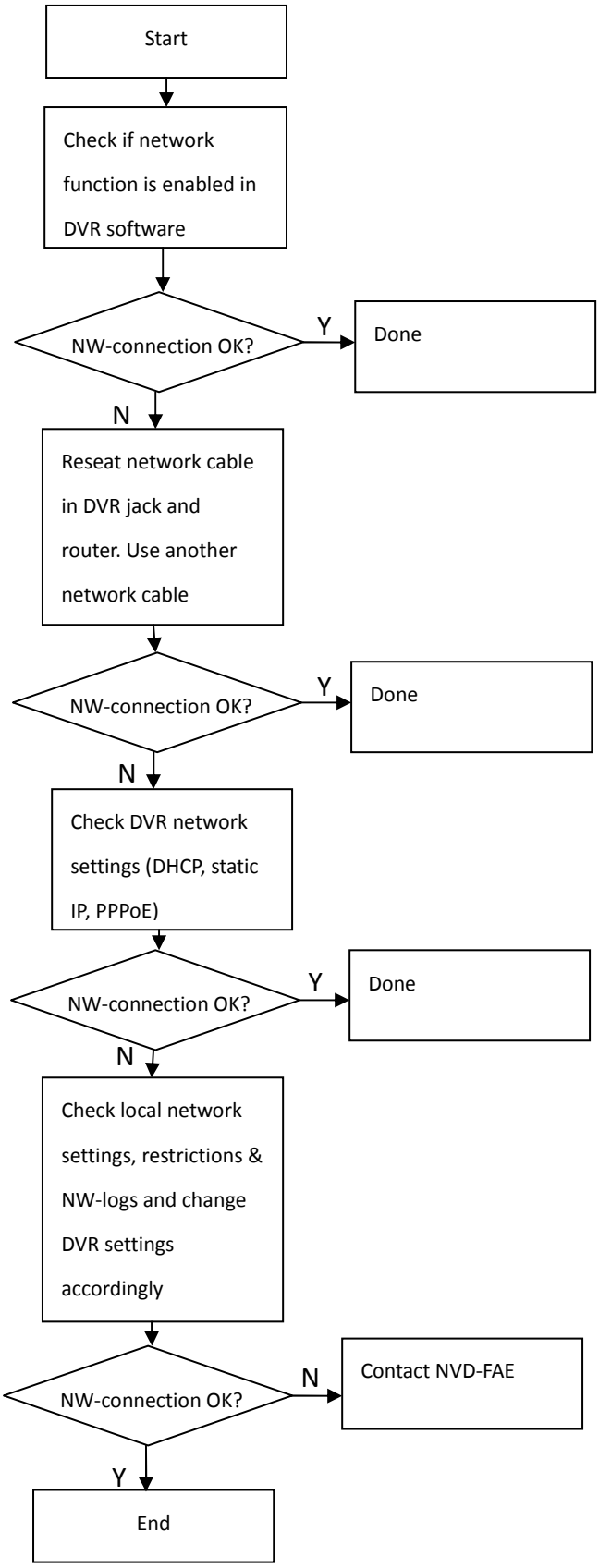
# 5. Troubleshooting Procedures

5.2 (UI related issues)

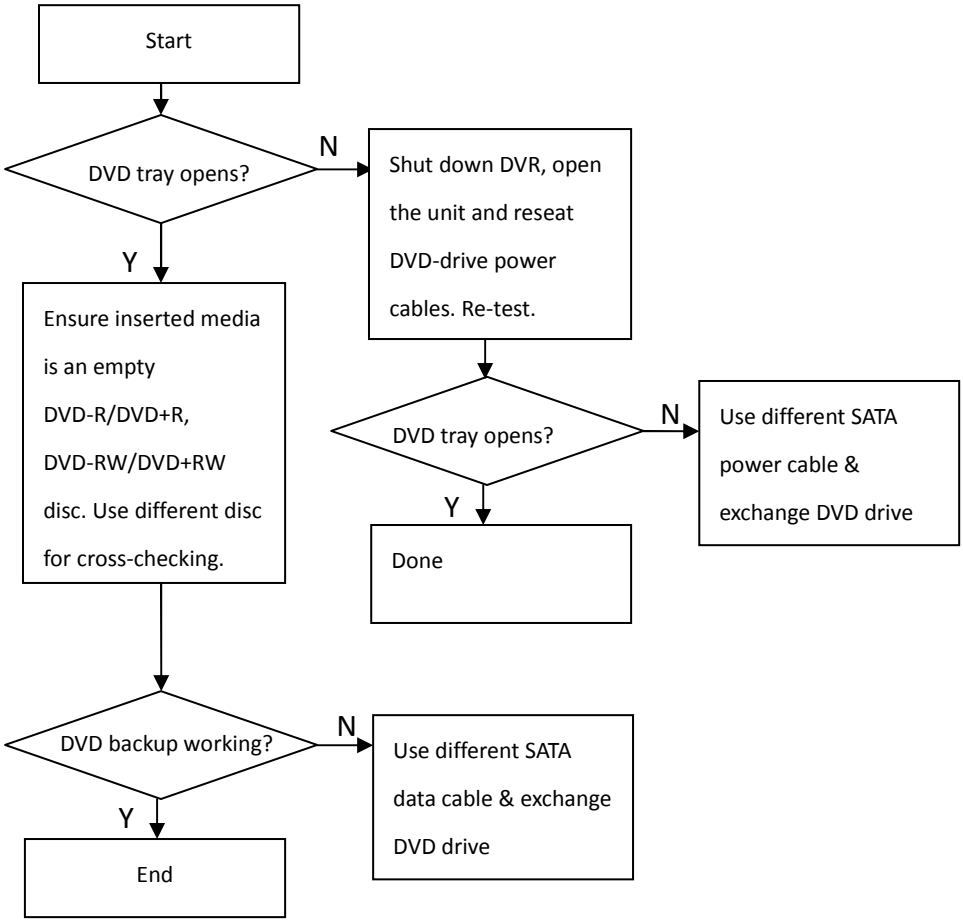
### 5.2.1. No camera (analog) display?



### 5.2.2. No network?



### 5.2.3. DVD backup not working?



### 5.2.4. No audio?

- Check audio connectors and reseat cables

- Check volume level of connected speakers

- Enable audio recording in DVR menu

- Check volume/mute settings in DVR software

### 5.2.5. HDD recording not working?

- Cross-check HDD model with HDD support list available on our website

- Open DVR, check HDD connectors and reseat cables

- Use different SATA/power connector and cable if available

- Try accessing the HDD, when mounted into your PC system

- Ensure recording is turned on within DVR software

- Check the remaining storage space available

- Check schedule and recording type settings

- Switch to always recording mode for testing purposes

### 5.2.6. Pointing device not working?

- Verify pointing device to be fully functional using PC or different DVR

- Use another pointing device

- Try plugging the pointing device into different USB-port if available

- Open the DVR unit and reseat the USB-front panel connection cables

### 5.2.7. Remote control not working?

- Check batteries within your remote control and exchange to new ones

- Make sure to point at the IR-receiver at the front receiver and verify if nothing blocks the visual connection between the remote control and the receiver

- If using an optional IR-extender cable, make sure it is plugged in correctly and enabled within the software (only EB-series)

- Make sure to set the remote control to the correct DVR-ID before usage (only EB-series)

- Try using a different remote control if available

### 5.2.8. Front panel control not working?

- Try different front panel-buttons and verify if all controls are not working

- Double check whether the unit is still operating normally by attaching an external input device. Try accessing menus and entering the playback mode.

- Open the unit and make sure all front panel connection cables are seated correctly

### 5.2.9. DVR shuts down unexpectedly?

- Check wall power plug for sudden power failure

- Reseat power cable in AC-adapter and wall outlet. Try using another power cord

- Check AC adapter for obvious damage (water, etc.) and replace if available

- Open the unit and make sure all fans are working correctly – check if their spinning is probably being blocked by dust. The unit may shut down due to overheating

- Check the internal power board for obvious damage

- Start up the DVR and check the “Schedule” options for reboot settings

- Check the event log to find details about the abnormal reboot (remote reboot, etc.)